

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Nobumasa SUZUKI et al. Group Art Unit : 3733
Appl. No. : 10/659,302 Examiner : R. Shaffer
Filed : September 11, 2003 Confirmation No. : 3567
For : ROD FIXING APPARATUS FOR VERTEBRA CONNECTING MEMBER

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Commissioner for Patents
U.S. Patent and Trademark Office
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401 Dulany Street
Alexandria, VA 22314

Sir :

This appeal is from the Examiner's final rejection of claims 1-3 as set forth in the Final Official Action of May 25, 2006.

A Notice of Appeal and a Pre-Appeal Brief Request for Review in response to the Final Official Action of May 25, 2006 were filed on September 25, 2006. The period for response was set to expire on the greater of one month from the October 23, 2006 mailing date of the Notice of Panel Decision from Pre-Appeal Brief Review, and the balance of the two-month time period of November 27, 2006 (November 25, 2006 being a Saturday) running from the receipt of the Notice of Appeal on September 25, 2006. Further, the instant Appeal Brief is being submitted together with a payment including the requisite fee under 37 C.F.R. § 41.20(b)(2) in the amount of \$250.00 for the filing of the Appeal Brief.

However, if for any reason the necessary fee is inadequate or is not associated with this file, the Commissioner is authorized to charge the fee for the Appeal Brief and any necessary extension of time fees to Deposit Account No. 19-0089.

Appellants respectfully request that the decision of the Examiner to reject claims 1-3 as set forth in the Final Rejection be reversed and that the application be returned to the Examining Group for allowance.

(1) REAL PARTY IN INTEREST

The real party in interest is Showa Ika Kohgyo Co., Ltd., as established by an assignment recorded in the U.S. Patent and Trademark Office on February 25, 2004 at Reel 015012, Frame 0458.

(2) RELATED APPEALS AND INTERFERENCES

Appellants are presently not aware of any other appeals and/or interferences which will directly affect or be affected by or have a bearing on the Board's decision in the present Appeal.

(3) STATUS OF THE CLAIMS

Claims 1-3 are on appeal and stand finally rejected.

Claims 1-3 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by JACKSON (U.S. Patent No. 6,110,172).

(4) STATUS OF THE AMENDMENTS

A Request for Reconsideration under 37 C.F.R. § 1.116 was filed August 25, 2006. No amendments were filed under 37 C.F.R. § 1.116 after the Examiner's final rejection of the claims by the Official Action of May 25, 2006.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The summary below is intended as a nonlimiting example of the claimed invention, and no estoppel should be deemed to extend therefrom.

Claim 1 is directed to a rod fixing apparatus 1, 17, 39 (figures 2A, 2B; figures 3, 4A, 4B; figure 5) for a vertebra connecting member 7 connecting separated vertebrae (Specification, page 4, lines 9-19; figures 2A, 2B), the rod fixing apparatus 1 including a pressure fixing device 13, 13, 36A (Specification, page 5, lines 3-7; figures 2A, 2B; figure 3; figure 5) configured to pressure fix a rod portion 7R (Specification, page 4, lines 24-25; figure 2B) to a circular arc rod engagement portion 9, 23, 35 (Specification, page 4, line 25 through page 5, line 2; figure 2A, 2B; Specification, page 7, lines 10-14; figures 4A, 4B; Specification, page 8, line 19; figure 5) engaging the rod portion 7R; and protruding portions 15, 29, 37 (Specification, page 5, lines 7-12; page 5, line 19 through page 6, line 10; figures 2A, 2B; Specification, page 7, lines 15-18; and page 7, line 25 through page 8, line 5; figures 4A, 4B; Specification, page 8, lines 21-26; figure 5) configured to eat into the rod portion 7R in both end sides of the circular arc rod engagement portion 9, 23, 35 outside the pressure fixing device 13 (Specification, page 5, lines 10-12; figure 2B; figure 4B; figure 5), the protruding portions 15, 29, 37 extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member 7 (figures 2A, 2B; figure 4A, 4B; figure 5).

Claim 2 is directed to the rod fixing apparatus 1, 17, 39 of claim 1, wherein a recess surface 9A (Specification, page 5, lines 13-18; figure 2B; Specification, page 7, lines 6-9; figure 4A; Specification, page 8, lines 22-26; figure 5) of the circular arc rod

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engagement portion 9, 23, 35 between the protruding portions 15, 29, 37 provided in the rod engagement portion 9, 23, 35 is formed as a rough surface.

Claim 3 is directed to a rod fixing apparatus 1, 17 (figures 2A, 2B; figures 3, 4A, 4B) for fixing a rod 7R of a vertebra connection member 7, comprising a screw portion 3 configured to be screwed into a vertebra body (Specification, page 4, lines 9-12 and lines 17-19; figures 2A, 2B); a head portion 5, 17H, 21 (Specification, page 4, lines 20-21; figures 2A, 2B; Specification, page 7, lines 1-3; figure 3) provided with a groove portion 11, 19 (Specification, page 4, lines 21-22; figure 2A; Specification, page 7, lines 3-6) connected to the screw portion 3 and configured to receive the rod 7R inserted therein (Specification, page 4, lines 21-25; figure 2B; Specification, page 7, lines 3-9), and an engagement portion 9, 23 (Specification, page 4, line 23 through page 5, line 2; figure 2B; Specification, page 7, lines 17-18; figures 3, 4A) into which a fixing device 13 (Specification, page 5, lines 3-7; figures 2A, 2B; figure 3) configured to fix the rod 7R is screwed; and small projections 15, 29 (Specification, page 5, lines 7-12; page 5, line 19 through page 6, line 10; figures 2A, 2B; Specification, page 7, lines 15-18; and page 7, line 25 through page 8, line 5; figures 4A, 4B) configured to eat into the rod 7R, the small projections 15, 29 being provided on both sides of the groove portion 11, 19 (Specification, page 5, lines 10-12; figure 2B; figure 4B), the small projections 15, 29 extending in a direction substantially perpendicular to a longitudinal direction of the rod 7R (figures 2A, 2B; figure 4A, 4B; figure 5).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-3 stand finally rejected under 35 U.S.C. 102(b) as being anticipated by JACKSON (U.S. Patent No. 6,110,172). The Examiner takes the position that the JACKSON patent discloses a bone screw assembly including a pressure fixing device 3, 4, a rod 15, a head portion 7, and protruding portions 17 provided on both sides of the groove. Further, the Examiner states that the protruding portions 17 extend in a direction perpendicular to the longitudinal axis of the spinal rod.

(7) ARGUMENT

In the Final Official Action of May 25, 2006, the Examiner rejected claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by JACKSON.

In the Advisory Action issued September 7, 2006, the Examiner maintained the rejection of claims 1-3 under 35 U.S.C. § 102(b).

In the Notice of Panel Decision from Pre-Appeal Brief Review issued October 23, 2006, the panel maintained the rejection of claims 1-3 under 35 U.S.C. § 102(b).

(A) The rejection of claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by JACKSON (U.S. Patent No. 6,110,172) is improper, the decision to reject claims 1-3 on this ground should be reversed, and the application should be remanded to the Examiner.

Claim 1:

Independent claim 1 sets forth a rod fixing apparatus including, inter alia, a pressure fixing device and “protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing

device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member".

Appellants submit that JACKSON lacks any disclosure of a rod fixing apparatus including a pressure fixing device and *protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member.*

Appellants' invention includes the rod portion 7R of the vertebra connection member 7 extending in a longitudinal direction along its axis. The first embodiment of the rod fixing apparatus also includes two protruding portions 15. The second embodiment of the rod fixing apparatus includes two protruding portions 29; the third embodiment of the rod fixing apparatus includes two protruding portions 37. In the first embodiment, the protruding portions 15 are positioned at first and second ends of the rod engagement portion 9. In the second embodiment, the protruding portions 29 are positioned at first and second ends of the rod engagement portion 23; in the third embodiment, the protruding portions 37 are positioned at first and second ends of the rod engagement portion 35. Accordingly, since the protruding portions 15, 29, 37 are positioned at the ends of the rod engagement portion 9, 23, 35 the protruding portions 15, 29, 37 "eat into the rod portion in both end sides of the circular arc rod engagement portion", as recited in claim 1. Therefore, since the protruding portions 15, 29, 37 are positioned at the ends of the rod engagement portion 9, 23, 35 the protruding portions

15, 29, 37 eat into the rod portion "outside the pressure fixing device", as recited in claim 1.

Further, as clearly shown in the figures, each protruding portion 15, 29, 37 extends substantially perpendicularly to the longitudinal direction of the vertebra connection member 7. In this regard, each protruding portion 15, 29, 37 extends circumferentially along the rod portion 7A of the vertebra connection member 7, substantially perpendicular to the longitudinal direction of the rod portion 7A. Thus, each protruding portion 15, 29, 37 extends "in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member", as recited in claim 1.

Appellants respectfully submit that the Examiner has misinterpreted the disclosure of JACKSON. The JACKSON patent discloses an assembly including a bone screw 2 having a U-shaped channel 10. A plurality of ridges 17 are positioned on the lower curved edge of the channel 10.

However, the plurality of ridges 17 of JACKSON do not eat into the rod portion in both end sides of the circular arc rod engagement portion. In this regard, the plurality of ridges 17 of JACKSON are positioned so as to cover the entire lower curved edge of the U-shaped channel 10. Additionally, the plurality of ridges 17 run from one end side of the circular arc rod engagement portion to the other end side of the circular arc rod engagement portion. The ridges 17 of JACKSON are not positioned on the ends of the U-shaped channel 10 as in Applicants' claimed invention and, thus, do not eat into the rod *outside the pressure fixing device*. Accordingly, JACKSON fails to disclose

protruding portions that “eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device”, as recited in claim 1.

Further, the ridges 17 of JACKSON do not extend in a direction substantially perpendicular to the longitudinal direction of the vertebra connecting member. In this regard, as clearly shown in figures 1 and 2 of the JACKSON patent, each ridge 17 extends in a direction parallel to the longitudinal direction of the spinal rod 15. As pointed out by Appellants and by the Examiner (i.e., “while yes, the elements (17) extend parallel to the rod”, Advisory Action mailed September 7, 2006, Continuation Sheet), the ridges 17 extend in a direction parallel to the rod. Each ridge 17 has a length, a longitudinal direction of extension. However, contrary to the Examiner’s position (i.e., they “ALSO extend perpendicular as a group. Even individually, they would extend perpendicular to the rod albeit much less than their length”, Advisory Action mailed September 7, 2006, Continuation Sheet), the rods do not extend in a direction perpendicular to the rod. In this regard, Applicants point out that the ridges 17 are arranged side by side in a row, which row extends along the lower curved edge of the channel. However, the claim recites protruding portions “extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member”, the claim does *not* recite a *group* of protruding portions extending perpendicular to the longitudinal direction. Moreover, even assuming, arguendo, that the row may be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod, each ridge 17 itself does not extend substantially perpendicular to the longitudinal direction of the rod. In this regard, Appellants

respectfully submit that the Examiner's position that the ridges extend both in the parallel direction and the perpendicular direction is incorrect and results from misinterpretation of the disclosure and teachings of JACKSON. In this regard, Appellants point out that the elements of JACKSON are *ridges*, which can extend in one direction *only*. Otherwise, the resulting element could not fairly be described as a ridge. Accordingly, the *ridges* 17 cannot fairly be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod. Moreover, the text of the JACKSON patent confirms this since column 4, lines 21-23 of JACKSON describes that the ridges 17 "extend from a first or front face 18 to a second or rear face 19 of the bone screw head 7". Therefore, JACKSON fails to disclose "protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member", as recited in claim 1.

Accordingly, Appellants submit that the JACKSON patent lacks any disclosure of a rod fixing apparatus including, inter alia, a pressure fixing device and "protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member", and that therefore JACKSON cannot possibly be viewed as anticipating any of the present claims.

For at least all of the above reasons, Appellants submit that the rejection of claim 1 under 35 U.S.C. § 102(b) is inappropriate and unsupported by the teachings of JACKSON. Therefore, Appellants respectfully request that the decision of the Examiner

to finally reject claim 1 under 35 U.S.C. § 102(b) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over JACKSON and for an early allowance of claim 1 on appeal.

Claim 2:

Appellants submit that dependent claim 2, which is at least patentable due to its dependency from claim 1 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally cited features.

In this regard, Appellants note that dependent claim 2 sets forth a rod fixing apparatus wherein a recess surface of the circular arc rod engagement portion between the protruding portions provided in the rod engagement portion is formed as a rough surface. However, the JACKSON patent fails to disclose a rough surface. Further, the Examiner's statement that contact with the protruding portions will roughen the surface is unsupported by the JACKSON patent. Accordingly, Appellants respectfully submit that JACKSON fails to disclose a rod fixing apparatus "wherein a recess surface of the circular arc rod engagement portion between the protruding portions provided in the rod engagement portion is formed as a rough surface".

For at least all of the above reasons, Appellants submit that the rejection of claim 2 under 35 U.S.C. § 102(b) is inappropriate and unsupported by the teachings of JACKSON. Therefore, Appellants respectfully request that the decision of the Examiner to finally reject claim 2 under 35 U.S.C. § 102(b) be reversed, and that the application

be remanded to the Examiner for withdrawal of the rejection over JACKSON and for an early allowance of claim 2 on appeal.

Claim 3:

Independent claim 3 sets forth a rod fixing apparatus for fixing a rod including, inter alia, a screw portion, a head portion provided with an engagement portion, and “small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod”.

Appellants submit that JACKSON lacks any disclosure of a rod fixing apparatus including a screw portion and a head portion and *small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod.*

Appellants’ invention includes the rod portion 7R of the vertebra connection member 7 extending in a longitudinal direction along its axis. The first embodiment of the rod fixing apparatus also includes two small projections 15. The second embodiment of the rod fixing apparatus includes two small projections 29; the third embodiment of the rod fixing apparatus includes two small projections 37. In the first embodiment, the small projections 15 are positioned at first and second ends of the rod engagement portion 9. In the second embodiment, the small projections 29 are positioned at first and second ends of the rod engagement portion 23; in the third embodiment, the small projections 37 are positioned at first and second ends of the rod

engagement portion 35. Accordingly, since the small projections 15, 29, 37 are positioned at the ends of the rod engagement portion 9, 23, 35 the small projections 15, 29, 37 "eat into the rod, the small projections being provided on both sides of the groove portion", as recited in claim 3. T

Further, as clearly shown in the figures, each small projection 15, 29, 37 extends substantially perpendicularly to the longitudinal direction of the vertebra connection member 7. In this regard, each small projection 15, 29, 37 extends circumferentially along the rod portion 7A of the vertebra connection member 7, substantially perpendicular to the longitudinal direction of the rod portion 7A. Thus, each small projection 15, 29, 37 extends "in a direction substantially perpendicular to a longitudinal direction of the rod", as recited in claim 3.

Appellants respectfully submit that the Examiner has misinterpreted the disclosure of JACKSON. The JACKSON patent discloses an assembly including a bone screw 2 having a U-shaped channel 10. A plurality of ridges 17 are positioned on the lower curved edge of the channel 10.

However, the plurality of ridges 17 of JACKSON do not eat into the rod portion in both end sides of the circular arc rod engagement portion. In this regard, the plurality of ridges 17 of JACKSON are positioned so as to cover the entire lower curved edge of the U-shaped channel 10. Additionally, the plurality of ridges 17 run from one end side of the circular arc rod engagement portion to the other end side of the circular arc rod engagement portion. The ridges 17 of JACKSON are not positioned on the ends of the U-shaped channel 10 as in Applicants' claimed invention and, thus, do not eat into the

rod *on both sides of the groove portion*. Accordingly, JACKSON fails to disclose small projections that are “configured to eat into the rod, the small projections being provided on both sides of the groove portion”, as recited in claim 3.

Further, the ridges 17 of JACKSON do not extend in a direction substantially perpendicular to the longitudinal direction of the vertebra connecting member. In this regard, as clearly shown in figures 1 and 2 of the JACKSON patent, each ridge 17 extends in a direction parallel to the longitudinal direction of the spinal rod 15. As pointed out by Appellants and by the Examiner (i.e., “while yes, the elements (17) extend parallel to the rod”, Advisory Action mailed September 7, 2006, Continuation Sheet), the ridges 17 extend in a direction parallel to the rod. Each ridge 17 has a length, a longitudinal direction of extension. However, contrary to the Examiner’s position (i.e., they “ALSO extend perpendicular as a group. Even individually, they would extend perpendicular to the rod albeit much less than their length”, Advisory Action mailed September 7, 2006, Continuation Sheet), the rods do not extend in a direction perpendicular to the rod. In this regard, Applicants point out that the ridges 17 are arranged side by side in a row, which row extends along the lower curved edge of the channel. However, the claim recites small projections “extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member”, the claim does *not* recite a *group* of small projections extending perpendicular to the longitudinal direction. Moreover, even assuming, arguendo, that the row may be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod, each ridge 17 itself does not extend substantially perpendicular to

the longitudinal direction of the rod. In this regard, Appellants respectfully submit that the Examiner's position that the ridges extend both in the parallel direction and the perpendicular direction is incorrect and results from misinterpretation of the disclosure and teachings of JACKSON. In this regard, Appellants point out that the elements of JACKSON are *ridges*, which can extend in one direction *only*. Otherwise, the resulting element could not fairly be described as a ridge. Accordingly, the *ridges* 17 cannot fairly be described as extending in a direction substantially perpendicular to the longitudinal direction of the rod. Moreover, the text of the JACKSON patent confirms this since column 4, lines 21-23 of JACKSON describes that the ridges 17 "extend from a first or front face 18 to a second or rear face 19 of the bone screw head 7". Therefore, JACKSON fails to disclose "small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod", as recited in claim 3.

Accordingly, Appellants submit that the JACKSON patent lacks any disclosure of a rod fixing apparatus including, inter alia, a screw portion, a head portion provided with an engagement portion, and "small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod", and that therefore JACKSON cannot possibly be viewed as anticipating any of the present claims.

For at least all of the above reasons, Appellants submit that the rejection of claim 3 under 35 U.S.C. § 102(b) is inappropriate and unsupported by the teachings of JACKSON. Therefore, Appellants respectfully request that the decision of the Examiner

to finally reject claim 3 under 35 U.S.C. § 102(b) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over JACKSON and for an early allowance of claim 3 on appeal.

(8) CONCLUSION

Claim 1 is patentable under 35 U.S.C. § 102(b) over JACKSON. Specifically, JACKSON lacks any disclosure of a rod fixing apparatus including a pressure fixing device, and *protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member.*

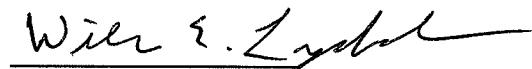
Claim 2 is patentable under 35 U.S.C. § 102(b) over JACKSON. Specifically, JACKSON lacks any disclosure of a rod fixing apparatus *wherein a recess surface of the circular arc rod engagement portion between the protruding portions provided in the rod engagement portion is formed as a rough surface.*

Claim 3 is patentable under 35 U.S.C. § 102(b) over JACKSON. Specifically, JACKSON lacks any disclosure of a rod fixing apparatus including a screw portion, a head portion provided with a groove portion, an engagement portion, and *small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod.*

Accordingly, Appellants respectfully request that the Board reverse the decision of the Examiner to reject claims 1-3 under 35 U.S.C. § 102(b), and to remand the application to the Examiner for allowance.

Thus, Appellants respectfully submit that each and every pending claim of the present application meets the requirement for patentability under 35 U.S.C. § 102(b), and that the present application and each pending claim are allowable over the prior art of record.

Respectfully Submitted,
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CLAIMS APPENDIX

1. A rod fixing apparatus for a vertebra connecting member connecting separated vertebrae, the rod fixing apparatus comprising:

 a pressure fixing device configured to pressure fix a rod portion to a circular arc rod engagement portion engaging the rod portion; and

 protruding portions configured to eat into the rod portion in both end sides of the circular arc rod engagement portion outside the pressure fixing device, the protruding portions extending in a direction substantially perpendicular to a longitudinal direction of the vertebra connecting member.

2. The rod fixing apparatus of claim 1, wherein a recess surface of the circular arc rod engagement portion between the protruding portions provided in the rod engagement portion is formed as a rough surface.

3. A rod fixing apparatus for fixing a rod of a vertebra connection member, comprising:

 a screw portion configured to be screwed into a vertebra body;

 a head portion provided with:

 a groove portion connected to the screw portion and configured to receive the rod inserted therein, and

 an engagement portion into which a fixing device configured to fix the rod is screwed; and

small projections configured to eat into the rod, the small projections being provided on both sides of the groove portion, the small projections extending in a direction substantially perpendicular to a longitudinal direction of the rod.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE